

## PRACTICAL CHEMISTRY.

*A Practical Chemistry Note-book for Matriculation and Army Candidates.* By S. E. Brown. Pp. v+56. (London: Methuen and Co., n.d.) Price 1s. 6d. net.

*Chemistry Note-books.* Sections i.-iv. By E. J. Sumner. (Burnley: Cooper Printing Co., Ltd., n.d. Privately printed.) Section i., 6d.; section ii., 9d.; sections iii. and iv., 1s. each, net.

*The Science of Common Life.* By J. B. Coppock. Pp. vi+273. (London: Swan Sonnenschein and Co., Ltd., 1906.) Price 3s. 6d.

*Practical Methods of Inorganic Chemistry.* By Dr. F. M. Perkin. Pp. vii+155. (London: Archibald Constable and Co., Ltd., 1906.) Price 2s. 6d. net.

*Chemical Analysis, Qualitative and Quantitative.* By Drs. W. Briggs and R. W. Stewart. Fourth edition, revised by H. W. Bausor. Pp. xii+200. (London: University Tutorial Press, Ltd., W. B. Clive, 1906.)

*Methods of Organic Analysis.* By Dr. H. C. Sherman. Pp. xii+245. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1905.) Price 7s. 6d. net.

“OF writing many books there is no end” can be truly said of chemistry, but need not be said with a sigh. Whether the author aspires to say something new and useful, or tries to smooth the rough road for the anxious candidate, or merely writes to supply a want felt more by himself than the reader, the appearance of so much new literature, whatever its character, implies a widespread activity in practical teaching.

There is a hopeful look about most of these volumes on practical chemistry for junior students. With the exception of Briggs and Stewart's “Chemical Analysis,” which has a certain flavour of chemistry as it was taught, the new volumes show that the subject offers something more instructive and exhilarating than the mere testing of simple or even complex salts—a few years ago the staple chemical diet of all beginners.

Although Mr. Brown's “Note-book” is written to prepare candidates for examination, this is no disparagement. Mr. Brown wisely does not attempt to explain in words what is more easily and quickly demonstrated, so that the volume is partly a book of instructions to the student, partly a guide-book to the teacher, and very largely a note-book of blank pages. The experiments, of which a number are minutely described, are well chosen and arranged, and provide an effective and varied programme, which should give a boy an excellent foundation to build upon. There is a doubt in the writer's mind whether this combination of text-book and note-book is entirely satisfactory, for the book will be used on the bench, and who does not recall the spotty and unwholesome appearance of the laboratory rough book towards the end of term, when acid and alkali, oxidising and reducing agent, have had time to work their natural and varied effect?

The object of Mr. Sumner's little note-books is rather a novel one. There are four sections corresponding to a four years' course. The printed matter is mainly a revision of what the student is supposed to have accomplished during the year and entered in his own manuscript note-book; but it is not complete, and certain blank spaces are left to be filled in at the end of the year's course from the aforesaid note-book. Thus the student is provided with a fair and accurate account of his year's work for reference. One does not wish to dogmatise about a matter of this kind of which one has had no experience, but, unless the student's notes are very badly kept, it seems doubtful whether the mere act of transcribing will be anything more than “a dull, mechanic exercise.” The original manuscript will probably be the better reference in the end, for the student will be more familiar with its contents. On the other hand, a good word must be said for the excellence of the manner and matter of the different sections, from which a teacher, as well as a student, may derive valuable suggestions.

The little volume by Mr. Coppock, with the attractive title of “The Science of Common Life,” contains a series of carefully selected and well-arranged experiments, but the evident care of the author is completely marred by a confused, verbose, and illiterate style of writing which would scarcely do credit to an ordinary schoolboy. The book abounds in such sentences as the following:—“Take a thermometer and warm it for about 20° higher up than its reading.” “We thus get squared paper if their distance apart is made equal to that of the printed lines.” “These gases consist of those found on page 206 together with large quantities of ammonia, which is removed on purification.” Here is a sentence destitute of a verb and also, it may be added, of a meaning:—“The radiation depending upon the nature of the body and a closed screen to the sky, which holds the heat.” “Eider-down quilts, furs and flannels are warm compared with corresponding linen articles.” Imitation furs are not unknown, but an eider-down quilt, or a fur, or flannel made of linen would be an inexpensive and no doubt attractive article of commerce.

The descriptions and explanations are as slovenly as the style is bad:—“There is another oxide of carbon called carbon monoxide . . .; this is the gas often seen on a fire.” Chapter ii. opens with the statement:—“It is a common expression to say that one thing is heavier than another,” which might almost have passed as a truism; but the author is of another opinion, and proceeds to show that it might conceivably be the other way round—this by way of introducing the notion of density.

There is a mass of inaccurate detail with which it is needless to deal. Sufficient has been said to show that the book cannot be honestly recommended as a satisfactory or trustworthy guide.

It is now generally recognised that the attractiveness of a first year's college course may be greatly enhanced and its interest stimulated by varying the routine of analysis with the preparation of inorganic

and organic substances. The little book on "Practical Methods of Inorganic Chemistry," by Dr. F. M. Perkin, embodies many familiar inorganic preparations and a few useful quantitative estimations which will be of real service in the laboratory.

An added interest would have been given by a reference to the original author of each preparation. Whilst the book may be confidently recommended, attention should be directed to the numerous errors which have escaped correction. In turning over the pages mistakes have been found on p. 13, in which a *tarred* filter-paper is recommended, and on the following pp. 24, 47, 48, 49, 50, 55, 63, 76, 80, 104, 131, 139. Brinn (p. 63) should be Brin, Woolf (p. 92) should be Woulfe, and Golschmidt (p. 121) Goldschmidt. Urea is surely not diamido carbonic acid (p. 68). It is not an acid, but an amide.

The volume on "Chemical Analysis," by Drs. Briggs and Stewart, is one of the University Tutorial Series, and, like its companions, is intended for the use of candidates for university examinations. The authors do not lose sight of this important fact, and the student is encouraged by an occasional reminder that his interests, as well as those of the science, are properly served. "In case a student is told that only one metal is to be looked for, the process of analysis is of course much simplified," and further, "it is foolish to follow up an unsatisfactory result in an examination." That the book fulfils its purpose is clear from the numerous editions which it has seen, and, when all has been said, it is a thoroughly sound work on the subject with which it professes to deal. If it should fail in its aim to teach the principles of chemistry the fault does not lie with the authors, but with those examiners who insist upon a pabulum of this kind for their candidates.

Dr. Sherman's book on "Methods of Organic Analysis" belongs to an entirely different category from the foregoing. The subject of analysis is specialised, and appears in its proper *rôle* as the handicraft of the well-trained chemist. The book is chiefly devoted to the analysis of foodstuffs and the more common organic materials. The methods are minutely described, sources of error are pointed out, and references to original literature are given. The book is evidently compiled with care and from personal experience, and should be a valuable adjunct to the organic laboratory.

J. B. C.

#### COTTON IN AMERICA.

*Cotton: its Cultivation, Marketing, Manufacture, and the Problems of the Cotton World.* By Prof. C. W. Burkett and C. H. Poe. Pp. ix+331. (London: A. Constable and Co., Ltd., 1906.) Price 8s. 6d. net.

THE story of cotton as told by Prof. C. W. Burkett, professor of agriculture in the North Carolina College of Agriculture and Mechanic Arts, and by Mr. C. H. Poe, the managing editor of a newspaper which caters for the American cotton

farmer, is a story of great interest, though very incomplete. The book would be more correctly described by the title of "American Cotton," for India, Egypt, and other cotton fields, and the efforts of England to widen the sources of supply by producing cotton within the British Empire, are little more than subjects for the authors' derision.

The reader is to understand that there is no cotton in the world like American cotton; that there is no soil on earth so suitable for growing cotton as American soil; that nowhere on the globe are cotton farmers equal to those of America; and that the only requisite to constitute an ideal state of things is for all the cotton farmers to join Mr. Harvie Jordan's association, and to regulate the acreage and the price according to the principles of that association. What those principles are the authors do not define, but in the official journal of the association for September 27, 1906, they are stated thus:—

"Dismiss all consideration of spinner, or consumer; let the spinner look out for himself and the producer for himself. This is business."

Further "business," much of the same nature, is indicated by the authors in a chapter on stopping leaks in cotton profits, wherein they say "the greatest leak of all is the shipping of 60 per cent. of our cotton to Europe instead of turning it into the finished product here."

If it is the ambition and the determination of the United States of America not to let any cotton "leak" out of the country, and, according to the authors, the fibre cannot be successfully grown elsewhere, it would be interesting to learn what they propose to do with the cotton-manufacturing industry of Europe! On the Continent "American greed" has become a by-word, but so far English people have had no cause so to express their opinion of Americans, and we refuse to believe that the authors of "Cotton" express anything more than a narrow, selfish class interest in their advocacy of American cotton for Americans, and at such a price as the growers' associations determine.

The value of the book lies in section ii., which contains a description of how the cotton-plant grows and is grown. To cotton farmers this section alone is worth the 8s. 6d. asked for the book. It treats of the botanical structure of the plant, seed selection, environment, climatic conditions, fertilisers, farm tools required, injurious insects, planting, cultivating, picking, and the cost of making cotton.

In speaking of ginning, we are told the tendency is to run the gins at high speed, but that this, though increasing the output, decreases the value of the lint. Whilst the great speed of the power gins is held up for admiration and wonder, it has to be confessed that "the old gin, when run by horse-power, was not open to this objection (maltreating fibre) urged against high steam power. Then you never heard of cut or broken fibres, or of crimped or knotted lint, such as is now caused by the impact of the saws when the cylinders rotate at high speed." There is a further confession that "no noteworthy improvement